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# Practical Statistics for Medical Research

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unevenly, the responses to a series of questions about policies and range of services: organisation and funding, historical background and current details of home care, service evaluation, and policy debate.

There are chapters from Belgium, Denmark, France, Germany, Italy, The Netherlands, the United Kingdom, and curiously, Israel. Coverage varies greatly. The Belgian chapter limits itself largely to arrangements in Flanders, themselves sufficiently complex to deter all but the most determined in their curiosity about what happens in the other half of the country. For Italy read Genoa, and not even very much about that. Danish services, organised by small local government units, are evidently uniform, broadly adequate, and successful in their main aim of avoiding unnecessary institutionalisation.

It would be unkind to treat this serious attempt to grapple with the diversity of origins, achievements, and challenges in home care as a kind of Eurovision Home Help Contest, but inevitably comparisons arise. There is a broad distinction between two traditions; one of charity, the other of entitlement, with complexity and unevenness flourishing in the wake of the former. The casual Eurovision viewer, especially if old, might be forgiven for favouring the latter.

All services face problems relating to referral and assessment, to organisation, funding, and evaluation. Home care—even without a recession—is inherently difficult: a social endeavour comparable to that greatest of military challenges, the fighting retreat. The old get older and frailer too. There are crises and periods of usually temporary relief; there is a need for constant vigilance and occasional energetic improvisation. But the surrender to institutionalisation, usually expensive and almost always unwelcome, is not one that comes easily.

This book, with all its faults, at least succeeds in portraying on a European scale the complexity of the problems involved. It underlines common aspirations and some common means. We are not alone in our uncertainties about home care. And care management, however difficult in practice, is the best means we have of reducing them.

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**Clinical Epidemiology: A Basic Science for Clinical Medicine** By D L Sackett, R B Haynes, G H Guyatt, and P Tugwell. (Pp 400; £23.95.) Boston: Little Brown, 1991. ISBN 0-316-76599-6.

A concise definition of clinical epidemiology remains elusive; indeed its existence as a distinct branch of epidemiology has been a source of much contention. The authors of this book, who are all practising clinicians, regard clinical epidemiology as a basic science for clinical practice and define it as being what clinical epidemiologists do. While their pragmatic approach has attractions it leaves some important issues of content unresolved.

The book is intended for the “users” of research rather than the “doers” and is organised in terms of clinical actions—diagnosis, management, and keeping up to date. The style is that of a self instruction manual, including six aide memoire cards for the white coat, presumably to be whipped out on ward rounds or consulted surreptitiously at less opportune moments. The second edition is 70 pages longer than the first and incorporates new material on concepts such as numbers needed to treat,  $n$  of 1 trials, interpretation of confidence intervals, and quality of life measures, as well as a major revision of the 120 page section on keeping up to date. This section now includes instructions on how to do literature searches, both traditional and electronic. How much this has to do with epidemiology is debatable but I did wonder whether British clinicians will be persuaded to use Medline to solve their clinical problems. In contrast the excellent sections on diagnosis and management are a superb exposition of the application of epidemiological expertise to clinical issues such as diagnostic testing, screening, and attribution of adverse events.

There are now at least four North American texts with the title “Clinical epidemiology”, some testimony perhaps to the vigour of clinical epidemiology there. Who should read this particular book? Certainly clinicians, to whom it can be strongly recommended. I have also found it a valuable source of material for undergraduate and postgraduate teaching. Public health physicians may prefer the more concise approach of Fletcher, Fletcher and Wagner’s *Clinical epidemiology*.

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**Practical Statistics for Medical Research.** By Douglas G Altman. (Pp 611; £32.) London: Chapman and Hall, 1991. ISBN 0-412-27630-5.

This excellent book is designed to instil a thoughtful approach into the reading of research literature and the planning and interpretation of research studies. The author is concerned to develop the reader’s insight into the fundamental concepts of statistics as applied to medicine, and how they fit into the reality of performing and assessing research. In the first chapter, inadequacies of presentation of results by the media and manufacturers are presented in such a way that the reader is led to consider how data should be obtained. The objective is not to present a catalogue of methods, still less one of formulae—but the latter are regarded as helpful in showing how analyses work, and it is recommended that except in cases of extreme hypersensitivity the reader should seek to understand how they apply.

The careful approach is exemplified by some of the chapter headings: these include “Designing research”—of course—but also,

“Preparing to analyse data”, “Clinical trials”, and “The medical literature”. Each chapter describing analytical methods includes a section on the presentation of results.

Douglas Altman is one of the statisticians responsible for the very welcome shift in emphasis in leading medical journals away from significance testing and towards estimation and confidence intervals. The emphasis in this book corresponds closely to this, leaving room for criticism only by those who reject even the confidence interval approach in favour of Bayesianism.

The author is concerned to establish use of terminology that will not mislead: thus “reference interval” is preferred to “normal range”, and regression involves outcome and predictor variables, not dependent and independent ones.

Useful examples of displaying data that make the most of the high resolution graphics now available include a plot with several dot diagrams and summary statistics for each column of points (page 40) and a scattergram matrix depicting graphically, but compactly, all the elements of a correlation matrix (page 342).

Each chapter includes exercises, which are quite searching and designed to be instructive, involving both performing analyses and interpretation. Helpful explanatory solutions are given. A small minority of the exercises have somewhat surprising contexts (astronauts, male singers)—in the latter case the relevance of the data to the issue being tested seems far fetched. Another exercise, on aviation accidents, is unclear, but apart from these, the general standard of the exercises is very high.

The bibliography section indicates the page in the text where each reference is cited—a practice that should become standard.

According to the preface, the book is recommended for medical researchers who have had some statistics teaching a long time ago, and is also useful for students, clinicians, and those doing postgraduate courses. The present price puts the book beyond the reach of medical undergraduates, though medical school libraries should be encouraged to have several copies available. Provision of a more reasonably priced paperback edition would put this helpful book within the reach of many more readers. The book is of great value to specialists in public health medicine and MFPHM trainees, and includes aspects of study design relevant to epidemiology, and confidence intervals for measures of relative risk. The scope is exclusively clinical and epidemiological research, however, and trainees tend to express a demand also for books such as that of Woodward and Francis<sup>1</sup> in which the orientation is towards health services management.

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<sup>1</sup> Woodward M, Francis LMA. *Statistics for health service management and research*. London: Edward Arnold, 1988.